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A guide to the Kyoto protocol: a treaty with potentially vital strategic implications for the renewables industry

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Abstract

Why should renewables advocates care about the arcane business of multilateral climate negotiations? The answer is simple. Because these long-running and oft bogged-down talks have as their 'ultimate objective' a goal with seismic implications for energy markets: 'substantial' reductions in greenhouse gas emissions. Coming anywhere close to that goal would entail the creation of multi-hundred billion dollar markets in renewables in the years ahead. And in Kyoto last December, governments took a meaningful first step in that direction.

This paper is a brief summary, and analysis of that first step. It concludes with some observations about immediate implications for the renewables industries.

1. Introduction

The treaty agreed in Kyoto on 11th December is the first Protocol to be added to the UN Framework Convention on Climate Change (UNFCCC) of 1992. The Kyoto Protocol adds to the UNFCCC its first set of teeth: legally-binding targets and timetables for greenhouse-gas emissions reductions. These targets and timetables apply to the industrialised countries plus countries with economies in transition (the UN term for eastern European countries), 38 states in all. These are known as Annex 1 countries, because they are listed in the first annex of the UNFCCC. All this background is made clear in a series of definitions in Article 1 of the Kyoto Protocol.

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2. Emissions targets and timetables

The heart of the treaty is Article 3, which describes targets, or 'assigned amounts' of greenhouse gas emissions which Annex 1 countries undertake to achieve by a 'commitment period' of 2008–2012. The overall aim is to achieve on aggregate emissions reduction of 'at least' 5% below 1990 levels. This can be achieved as an annual average of emissions over the commitment period.

The EU went into Kyoto seeking a flat rate cut of 15% in the first three gases by 2010. The U.S. position was for a freeze in all six by 2008–2012. The Japanese bid of around 5% was closest to the actual outcome.

The agreement covers a 'basket' of six gases, as Annex A of the Protocol describes. These, in order of bulk global-warming importance (but not molecule-for-molecule Global Warming Potential), are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons (HFCs), perflourocarbons (PFCs), and sulphur hexaflouride (SF6). The last three, industrial gases with flourine in common (known informally as the 'F' gases) have the strongest global warming potential, but so far have been produced in only relatively small amounts. The base year chosen for cutting these F gases can be 1990 or 1995, depending on government choice.

To bring the U.S. on board, the EU conceded on both the amount of the cut (an environmental weakening of their position), and the number of gases involved (an environmental strengthening of their position). The U.S. conceded on the amount of the cut, in return for further EU concessions on what the U.S. terms 'flexibility:' differentiation of the target, emissions trading, joint implementation and net accounting, as described below.

Not all countries have to achieve the same target. The 'quantified emissions limitation or reduction' commitments for each country are listed in Annex B. Most have accepted an 8% cut, but some have accepted less, including the U.S.A. on 7%, and Japan and Canada on 6%. Russia, the Ukraine and New Zealand will be allowed merely to freeze their emissions. Some countries will even be allowed to increase: Norway by 1%, Australia by 8% and Iceland by 10%.

In the negotiating endgame, the EU—disappointed that other industrialised countries were unwilling to accept their flat-rate 15% target for carbon dioxide, methane and nitrous oxide—rejected successive bids of 2% and then 5% by the U.S.A. Japan and Canada also moved a percentage point at the eleventh hour. But the price for the EU was inclusion of trading and the other flexibility measures.

Each party is to achieve 'demonstrable progress' by 2005 in achieving its commitments under the Protocol. Though this is not defined, nor is it obligatory. It represents a small concession to EU disappointment that the commitment period extends out to 2012. Late in the negotiations, the target period was switched from 2006–2010.

States overshooting on their targets can effectively bank their emissions for use in any subsequent commitment periods set up as the Convention and Protocol negotiations evolve. This is another weak aspect of the treaty, with respect to the long-term objective of the Convention to stabilise atmospheric greenhouse-gas concentrations at levels that short of danger. However, on the plus side, the Protocol did not specifically

sanction states undershooting on emissions to 'borrow' from future commitment periods.

3. Policies and measures

How the Annex 1 countries shall achieve their emissions targets is set out in Article 2 in the form of a list of eight policies and measures that can be used. These include 'enhancement of energy efficiency,' 'increased use of new and renewable forms of energy,' and 'protection and enhancement of sinks and reservoirs of greenhouse gases.' Picking and mixing among the options is left to the choice of each state 'in accordance with its national circumstances.' In the wake of this, it goes without saying that it will pay the renewables industries to beef up their lobbying support.

An EU effort to negotiate a series of quantified co-ordinated policies and measures for universal adoption by Annex 1 parties did not succeed. For the moment, the Parties agree to share experience and information in implementing abatement policies and measures, and to consider whether or not to add co-ordinated programmes later. For renewable energy advocates, this represents a lost opportunity, since a global target for a renewable share of the energy mix—for example, the 12% share of energy by 2010 proposed by the European Commission—would have strengthened the signal sent to the energy markets by the Protocol.

Article 2 also states that the Annex 1 countries should work to limit and reduce emissions from aviation and marine bunker fuels. These are deemed to be separate from all other fossil fuel use because of difficulties in deciding which country is using them during international travel. Aircraft and shipping make up as much as 5% of global CO_2 emissions. Leaving them outside any control agreement is therefore a sizeable loophole.

4. The use of sinks: net accounting

The assigned amounts of emissions set in Article 3 and Annex B can be calculated using the net approach, whereby the amount of carbon sequestered by afforestation and reforestation since 1990 is deducted from the total, and the amount lost to deforestation since 1990 added. Article 3 specifies that such changes in forest stocks must be 'reported in a transparent and verifiable manner.' However, rules of the road have been left for elaboration at the first Meeting of Parties (MOP) 'or as soon as practicable thereafter.' These rules of the road will also include decisions about whether additional human-induced activities related to agricultural soil and land use can be added to the net accounting system.

The net approach was a very contentious issue throughout the negotiations, and remains so at the time of writing. It will be very difficult to be sure how much carbon is being stored (or removed) by different types of land use. This is so even of simple afforestation—where the same tree species can sequester different amounts of carbon in different geographic locations—much less the other forms of land use that countries

like Canada and New Zealand want added. A legally-binding target calculated on the basis of necessarily imprecise science provides temptation to cheat. The amount of fossil-fuel burning which would be cut by the Kyoto Protocol in the absence of net accounting would nowhere exceed 10%. Yet some states, notably Russia, have enough forest on paper to offset that and a great deal more. Carbon sinks are therefore a problematic loophole in the Protocol. The magnitude of the loophole will be determined in the negotiations to come. Much will depend on scientific advice from the IPCC and the related technical body within the Convention, the Subsidiary Body for Scientific and Technical Advice (SUBSTA).

5. The EU 'bubble'

Rules concerning countries acting jointly are set out in Article 4. This whole article in effect refers to the EU bubble—the long-time agreement of the 15 EU countries to have a collective reduction commitment within which the richer EU states would cut emissions more deeply than the aggregate target in order that the poorer EU states could increase emissions. The article specifies that in the event of additional members joining the group of those acting jointly, the collective target under the Protocol cannot be changed.

For much of the endgame in the negotiations, the U.S.A. and Japan attacked the idea of the EU bubble. They took the view that the EU was effectively engaging in joint implementation within the Union, while opposing it outside. The EU held its ground on the bubble, but conceded among other things that joint implementation would be allowed between Annex 1 countries who are not part of regional economic integration organisations.

6. Joint implementation

Any Annex 1 country will be able to invest in both emissions reductions and sink-enhancement projects in another, and claim the 'emission reduction units' which result for offsetting against its domestic allowance. Article 6 spells out the rules for this joint implementation (JI) mechanism. JI projects must be agreed by both the governments involved, who can authorise 'legal entities'—usually big companies—to undertake the work.

This was one of the main items required in the U.S. as part of what it called a 'flexibility' package. The EU and developing countries opposed to JI had long argued that it would detract from the need for big emitters like the US from taking vital steps to alter their own energy infrastructure towards a lower-emissions course. But this has been covered to a degree in the text, which stipulates that JI projects must be 'supplemental to domestic actions' to meet a country's target. Another problem raised, that of making sure the emissions reductions or sink enhancements are 'real,' has also been addressed to a degree. They must be 'additional to any that would otherwise

occur,' the Article stipulates. However, detailed rules and regulations, as with net accounting, have been left for the first Meeting of Parties.

7. Clean development mechanism

The Clean Development Mechanism (CDM) is a form of JI, defined and elaborated in Article 12, involving Annex 1 countries and developing countries. The mechanism has the goal of helping developing countries 'in achieving sustainable development,' and allows any Annex 1 country contributing funding to the CDM between 2000 and 2007 to do so for credit offset against 'part' of their emissions allowance at home. This is a very important article because it is the only part of the Protocol dealing with developing country involvement. The US—responding to pressure from the Senate—entered the Kyoto negotiations insisting on 'meaningful' participation by 'key' developing countries in emissions limitations targets. A draft article allowing developing countries voluntarily to sign up for legally-binding targets and timetables, of their own choice, was deleted in the final session of negotiations after pressure from China, India and others.

As with JI projects, CDM emissions reductions must be 'additional' to those that would have happened anyway. Reductions must be certified by 'entities' designated by the COP. Both public and private bodies can participate in the CDM. Certification criteria, verification processes, and auditing will be established at the first Meeting of Parties. Once again details of the implementation have been deferred, although the early start (2000) is a concession to US desire to begin the CDM process as soon as possible, and this will add pressure to agree how all this will be carried out. Progress on this Article is clearly going to be relevant to the ratification in the US Senate.

8. Emissions trading

The prolonged discussions of this contentious issue were boiled down in the Protocol to just three sentences in Article 16bis (renumbered to 17 since Kyoto), a late addition (in the early morning of the final night of negotiations) to the text replacing sections on trading from Article 3. All this short Article states is that emissions trading will be allowed between Parties taking on emission commitments (i.e., the Annex B list), so long as it is 'supplemental' to domestic actions on emission 'limitation and reduction.' The G77 and China fiercely opposed inclusion of trading, fearing it would obviate the need for some countries to limit emissions at all, merely allowing them to conduct paper transfers with countries having 'surplus' emissions to sell. Rules are once again to be decided later, by the COP.

The EU argued strongly against trying to define any rules because the time it would have taken would have risked completion of the Protocol. There was some talk in Kyoto of limiting trading to 50% of the legally-binding emissions targets, but the Protocol did not include such a stipulation. Open questions include the following. Should all gases be tradeable, or just CO_2? Should sinks be included in trading? How

can the amounts of emissions involved in deals be verified to the satisfaction of governments not party to the deals? Will a regime of sanctions be set up for non-compliance? The answers to these questions will have major bearing on how effective the Protocol is, overall, in cutting emissions and hence changing energy markets to the benefit of renewables. When it comes to trading between countries, Russia is likely to be the biggest trader on the block. It is emitting far less greenhouse gas than in 1990, due to economic problems in the FSU, and expects to be 10–20% below 1990 levels in 2008 even allowing for growth between now and then. This paper 'surplus' of emissions has been dubbed 'hot air' at the climate talks. Hot air trading is likely to be much in the news in the years ahead. When it comes to trading within countries, this will of course also be allowed, and it could well be that it assumes a more important role than trading between countries. By way of potential analogy, the experience of the US sulphur trading regime (on which example the US based many arguments for their proposed Kyoto Protocol trading regime), was that much of the action took place within rather than between companies.

9. Sanctions

Yet another task for the next COP will be to agree 'appropriate and effective' methods to address non-compliance, including 'the development of an indicative list of consequences.' Ideas under discussion include fines with the revenues used to sponsor CDM projects in developing countries and punitive additions to the next emissions commitment period.

10. Entry into force

From March 1998, states will have 12 months in which to sign the Protocol. It will enter into force after it is ratified by 55 parties to the Convention, including Annex 1 parties accounting for at least 55% of the total CO_2 emissions from Annex 1 countries in 1990. In theory, since the U.S.A. contributed 40% of the 1990 total Annex 1 emissions, the Protocol could enter into force without them. In practice, that is not likely.

11. Overall assessment

A common view of the Kyoto Protocol is that it is too little, too late, and therefore another tragic lost opportunity in the seven year record of multilateral negotiations on climate change. And indeed, if the Protocol succeeds in achieving the minimum 5% Annex 1 cut by 2008—itself far from certain, given all the potential loopholes built into the sinks, trading and joint-implementation provisions—it has to be remembered that global emissions would nonetheless still be rising at that time. This is because of the inescapable growth of emissions in developing countries.

But it has to borne in mind that none of the proposals carried into the Kyoto negotiations—including the AOSIS proposal of a 20% cut by 2005, which no developed country supported—would have been capable of delivering the ultimate goal of the Convention, or anything close to it. That goal is the stabilisation of atmospheric greenhouse-gas concentrations at levels which prevent dangerous interference with the climate system. Those levels must not threaten ecosystems' ability to adapt, food supply and economic development. To achieve that, deep cuts in global emissions (not just Annex 1 emissions) are required. Hence, in the understanding of all governments in Kyoto, the Protocol is intended merely as a first step. And given the enormity of the ultimate goal of deep global emissions cuts—essentially a wholesale retreat from fossil fuels, and hence a paradigm shift in energy markets—many people do not expect governments acting alone ever to be able to deliver.

In that sense, the ability or otherwise of the Kyoto Protocol to telegraph messages to energy markets is very important. The key question to ask about Kyoto is whether or not it will be capable of sending a message favouring independent changes in energy markets; whether or not it will be perceived in industry boardrooms as a sign of the writing on the wall. In the analysis of many, this was indeed achieved. The United States, for example, has signed on to an energy future where 37% less energy will be used by 2008–2012 than would otherwise have been the case. That must send a signal to corporate planners and investors.

But the strength of the signal is vital, in terms of how much change in procurement, energy mix, and investment it can leverage. And that depends in large measure on how the negotiations about potential loophole issues go in the years ahead. Of course how well the sustainable energy industry and its supporters respond to opportunities in the near term will also be very important. The game is still very much on, and Kyoto has kept hope alive, where—if the Global Climate Coalition had had its way—it could have been buried.

Now is the time for the renewables industries to deploy high-powered, heavy-hitting—and most important of all—*full time* lobbyists into the bear pit of the ongoing climate negotiations. As yet, the standard-bearers of the renewables industry have been few, under-resourced, and part-time at the negotiations. Full-time representatives of sufficient throw-weight will be listened to avidly by a battery of potential government allies. The breadth and complexion of those allies would amaze people unfamiliar with the negotiations. They are not limited to environment departments, nor are they absent from countries ostensibly dependent on fossil fuels. They are a resource which the renewables industries, in the post-Kyoto world, cannot afford to ignore.